

CLAIMS

1. A vehicle remote control apparatus comprising:

a first transmitter for outputting an authentication request signal to a
5 mobile device, the mobile device including a radio terminal assigned with an
identification code special to a vehicle and outputting an authentication
response signal corresponding to the identification code;

a second transmitter for outputting an interference wave canceling the
authentication request signal at the same time as the first transmitter
10 transmits the authentication request signal;

a receiver for receiving the authentication response signal output from
the mobile device in response to the authentication request signal, thereby
checking authenticity of the authentication response signal; and

a controller for controlling operation of an on-vehicle equipment unit
15 based on a result of authentication of the authentication response signal.

2. The vehicle remote control apparatus according to claim 1,

wherein the interference wave sets limits to a communicatable range
between the first transmitter and the mobile device.

3. The vehicle remote control apparatus according to claim 1,

wherein the first transmitter and the second transmitter exchange their
functions when the receiver does not receive an authentication response signal
for a predetermined period of time.

4. The vehicle remote control apparatus according to claim 1,

wherein the on-vehicle equipment unit is a door of the vehicle and the

controller controls a lock of the door.

5 5. The vehicle remote control apparatus according to claim 4,
 wherein the controller releases the lock of the door when the
 authentication of the authentication response signal is validated.

6. The vehicle remote control apparatus according to claim 1,
 wherein the interference wave is a burst wave.

10 7. A vehicle remote control system comprising:
 a mobile device including a radio terminal assigned with an
 identification code special to a vehicle and outputting an authentication
 response signal corresponding to the identification code; and
 a vehicle remote control apparatus having:

15 a first transmitter for outputting an authentication request signal
 to the mobile device;

 a second transmitter for outputting an interference wave canceling
 the authentication request signal at the same time as the first
 transmitter transmits the authentication request signal;

20 a receiver for receiving the authentication response signal output
 from the mobile device in response to the authentication request signal,
 thereby checking authenticity of the authentication response signal; and

 a controller for controlling operation of an on-vehicle equipment
 based on a result of authentication of the authentication response
25 signal.